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Rail Road News.

Railroad Depots in New York City.

The Erie Railroad Company are about to erect a depot at the foot of Duane street. It is to be a magnificant structure. It will occupy a front of 75 feet on West street, filling up the vacant space between Reade and Duane street; it will extend back to Washington street, a distance of two hundred and seventy feet. The front on the River is to be built of brown stone, and will be ornamented in a rich and becoming style; the remainder will be built of fine brick, with granite sills and facings to the doors and windows. Eight large and commodious stores are to occupy the fronts on Duane, Washington, and Reade streets, while the quarters of the Company will be on West street side. Mr. C. Brown, the architect, is now preparing his plans, with a view to the construction of an edifice, not only grand in effect, but of solid and permanent structure. It will be completed and ready for occupation by the first of May, 1851. The cost is estimated from $60,000 to $70,000.

Light Locomotives.

Quite a number of light locomotives have recently been introduced on some of the British railroads to carry light trains on short routes; they seem to be quite successful. They are built on what is termed "Adam's Patent," a hermophrodite between the American and English locomotive, and they work well. One of these weighing only ten tons took a train of six carriages from Glasgow to Edinburgh, 44 miles, in one hour and twenty minutes.

Iron Railroad Bridges.

Since the catastrophe on the New York and Erie Railroad, the company have come to the determination to erect no more iron bridges, and to remove the only two remaining on their road as soon as wooden ones can be erected. They do not express a positive opinion as to the comparative safety of the two, but they will use no more iron ones, and of course leave an inference unfavorable thereto.

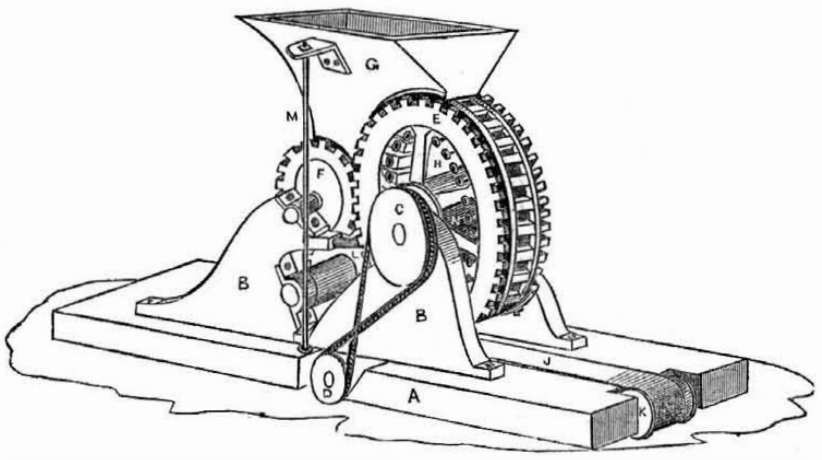
The New York and New Haven Railroad Co., in addition to the one they have already erected in Broadway, are to have another on the corner of Centre and Canal streets. — The Harlem Railroad Company are about erecting a large and splendid depot on Tryon Row.

Freshets

This has been a summer full of freshets and floods. We never recolect of having seen so many rain storms. This week, we perceive that a very disastrous flood has swept the Lehigh Valley, in Pa. Last Monday was one of the most stormy wet days we have ever seen in New York.

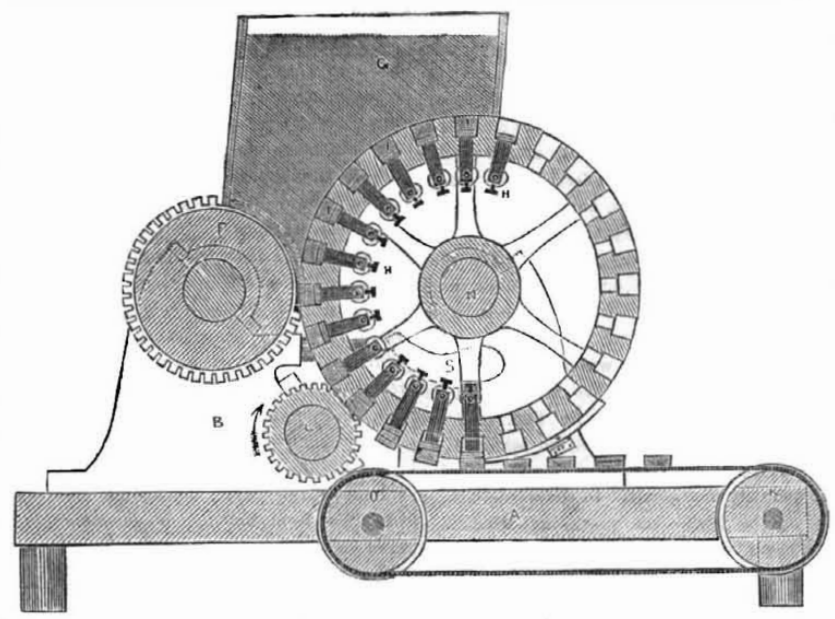
Chambers' Journal asserts the opinion that whenever the people are constantly protected by governments, under the idea that they cannot help themselves, they necessarily become imbecile.

IMPROVED BRICK MAKING MACHINE.---Fig. 1.



This improved machine is the invention of I. Z. A. Wagner, of Philadelphia, who has taken measures to secure a patent for the same. Fig. 1 is an isometrical view, and fig. 2 is a vertical longitudinal section. The same letters refer to like parts. This machine consists of a large revolving metal wheel, which has a number of boxes in its periphery, of the form of the brick to be moulded, and which constitute the moulds. In the inside of these moulds are plungers, which recede to allow the clay to come in for moulding, but when they come to an endless apron below, a cam acts upon the said plungers, and they push out the bricks, delivering them on the endless apron to be carried away. This is an outline of its main working features. A is the metal base of the machine; B is the frame; C is a pully on the shaft of the mould wheel, E. The rims of the mould wheel are made of toothed gearing, and gear into wheels, F, (one on each side) of a pressure metal roller, which works close up against the face of the mould wheel, excepting that part opposite the moulds, which is a little recessed all around, leaving a space between the two; D is a pully to drive the drum O, (fig. 2) of the endless apron, J. G is the hopper to receive the prepared clay. This hopper is supported by screw rods or posts, M, (one on each side.) The hopper has a rim which fits snugly into recesses in the mould wheel, and the pressure roller, F, to keep the clay from getting between the teeth of the wheels. L (fig. 2) is another pressure roller, which is the one used for driving the whole machine by a pully on its shaft, which derives its power by belt from any prime motor. The periphery of this pressure roller works close

Figure 2.



against the face of the mould wheel. The plungers inside of the moulds, I I, in the mould wheel, have piston rods, which have heads upon them, in which are inserted cross bars, and these have small rollers, H, affixed outside on their ends. S is an inclined cam (there is one on each side) secured inside of the frame, B, under the shaft, N, of the mould wheel. When the wheel revolves, each of these rollers run on this inclined cam, which thus actuates the pistons of the plungers, by forcing them out, and thus delivering the brick on the endless apron, J. In case, however, that the moulded brick might stick to the end of the plunger, Mr. Wagner has attached a lever on each side, secured to the inside of the frame, B, under the mould wheel and above the apron, and the end of these levers are touched by cams on the side of the mould wheel (one cam for each mould) when the lever immediately pushes the moulded brick from contact with the mould wheel, and it drops on the carrying apron. The first roller, F, acts like a feed roller to pack the moulds with the clay, but leaving a little clay projecting out, and then the second pressure roller, by being placed closer to the face of the moulds, presses the clay solidly into the moulds, and smooths the face of the brick. This is a rotary brick moulding machine, and figure 2 exhibits the moulds filled, delivering, empty, and some of the bricks on the endless apron, which moves over the rollers, O K. Machines of any size can be made to suit large or small brick yards, and is therefore very convenient.

More information can be obtained by addressing J. B. Imlay, assignee, 203 Market st., Philadelphia.

Useful Receipts.

The Manufacture of Varnished Leather in France.

This process consists of two operations:—First, the preparation of the skin; and second, the varnishing of the leather thus dressed, in the preparation of the leather, linseed oil, made to dry quick by means of metalic oxides and salt, is employed as the basis. For each twenty-two gallons of linseed oil, twenty-two lbs. of white lead and twenty-two lbs. of litharge are employed, and the oil boiled with those ingredients until it has attained the consistency of syrup. This preparation, mixed either with chalk, or ochres, is applied to leather by means of appropriate tools, and well worked into the pores; three or four layers are applied in succession, taking care to dry each layer thoroughly before the application of the next coating. Four or five coatings of the dried linseed oil, without the admixture of the earthy substances, are then given, the addition of very fine ivory black and some oil of turpentine is usually made to the oil. These coatings are put on very thin and when carefully dried the leather is rubbed over with fine pumice stone powder to render the surface perfectly smooth and even, for the reception of the varnish. The varnish is composed as follows:—ten pounds of oil prepared as above, half a pound of asphalt or Jewish bitumen, five pounds of copal varnish, and ten pounds of turpentine. The oil and asphalt are first boiled together, the copal varnish and turpentine added afterward, and the mixture well stirred. Instead of asphalt, Prusian blue or Ivory black may be employed. This varnish must be kept in a warm place for two or three weeks before it is fit for use. The greatest possible care must be taken both before and during the application of the varnish to prevent the adherence of any dust to the leather. The leather, when varnished must be be put into drying stoves heated to about 200 degrees or more, according to the nature of the leather and the varnish employed.

Glazing Iron Vessels.

The iron vessels are cleaned perfectly in weak sulphuric acid, then washed well in soft cold water, and dipped into a thin paste made with quartz melted with borax, feldspar, and clay free from iron, reduced into an impalpable powder with sufficient water to make it into a thin paste. After the vessels are dipped in this paste, or the said paste laid on with a brush, they are powdered in the inside with a linen bag containing a very finely pulverized mixture of feldspar, carbonate of soda, borax, and a little oxide of tin. They are then left to dry for some time in a clean place, and then heated in an enamelling furnace. This coating is very white, and resists the action of heat, acids and alkalies. The great defect in coating iron vessels, for cooking or to be used and exposed to great changes of heat and cold, is the expansion and contraction of the metal, which soon scales off the glazial coverings.

Anti-Attrition, and Axle Grease.

1st. One part of fine black lead, ground perfectly smooth, with 4 parts of lard. Some recipes add a little camphor.

2nd. Booth's Axle Grease, (expired patent.)—Dissolve ½ lb. of common soda in 1 gallon of water, add 3 lbs. of tallow, and 6 lbs. palm oil (or 10 lbs. palm oil only), heat them together to 200 to 210° Fahr.—mix and keep the mixture constantly stirred till the composition, is cooled down to 60 or 70°. A thinner composition is made with ½lb. of soda, a gallon of water, a gallon of rape oil, and ¼ lb. of tallow or palm oil.

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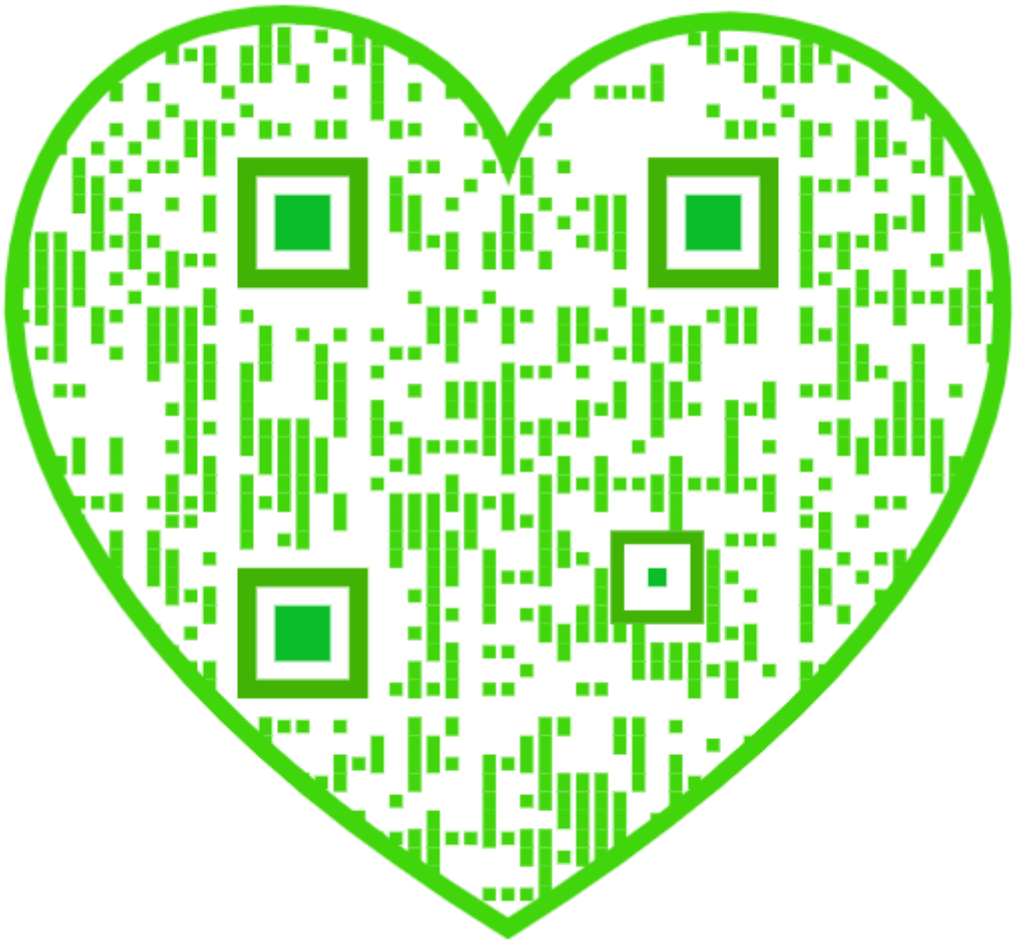

Miscellaneous.

American Association for the Advancement of Science.

(Continued from page 394.)

UNITY OF THE HUMAN RACE.

Prof. Adams, of Amherst, communicated a paper on the origin of the species of terresterial molusca, in the Island of Jamaica, in which he gave utterance to some singular views. He states that the human species graduate into each other in such a manner, that the fact is often used as an argument for confounding all the races in one species. Yet it is admitted that the differences between the human races are much greater than between many distinct species of animals. Our conclusion is briefly expressed in the proposition, that species are of the same nature as genera; that is, are to be founded on types, whether or not an impassable vacuum can be found between the types. The second inference on the nature of the species, and higher groups, is this, that the natural types are not susceptable of being wholly comprehended in a few successive ranks, in each of which all the types shall be of exactly equal value; but that there is an indefinite series of types within types, which are inequidistant. Since the sub-types of species are distributed with great regard to locality, it is obvious that much of the perplexity, which results from the graduation of species into each other, is avoided by those travellers who take but a few specimens from distant localities and by those collectors, who are satisfied with a single well-characterized specimen of each species. Such collections are valuable as exhibiting types; but they very imperfectly represented the relations of types; as a small group of human figures, of which one should be an Apollo, another a Congo negro, with two or three other as well characterized specimens, of distinct races, would very inadequately illustrate the natural history of mankind. It is obvious, also, that a difference of opinion between any two naturalists on the question, whether a given species is a good species, does not necessarily indicate a want of discrimination in the observers. It rather indicates that the type in question is a little above or below the rank into which it is attempted to force it. What shall we say now of the logical notion of infinæ species, which would both hypothetically characterize a species by unity of origin, and require us to find an impassable gulf between those species which are most closely allied? Such a doctrine only shows how the world would have been constructed, if philosophers had made it. We will venture to affirm that the facility of discovering such species will be inversely as the knowledge of the facts.

Our second topic of the origin of the species. The common notion of infirnæ species settles the question of unity or plurality of origin by definition! The facts conducted to the inference, that the species were introduced by the creation of many individuals, which were modelled according to certain types, that were mostly but not wholy local, and which differed from each other unequally, as do the existing varieties. The proof of this proposition is found in the geographical distribution of the varieties. In the great majority of species, the varieties are so distributed, that the space which is occupied by one of them coincides with that of the other two or more. Now if the circumstances of locality had produced the local types by modifications of one original type of the species, then all the varieties which inhabit a locality should have been effected. The geographical coincidence of one variety with several local varieties is inconsistent with any other theory than that of an original constitutional peculiarity of character in each variety. The same general mode of distribution holds in the case of entire species. Some are very local, and others, more widely distributed, occupy the ground of several local species. We have then indistinct varieties, distinct varieties, doubtful species, good species, and groups of species, and all the intermediate types, distributed in the same manner. Now, the theory of unity of origin requires us to believe that all the types which are below the value of a species are the effects of locality; and although specific types of exactly equal value do not exist, in all groups, yet that the types which are exactly of a specific value were created in one centre in a single stock, but that those types which are more comprehensive than species, had a plural origin of exactly as many as they contain good species.

[Prof. Agassiz entertains the same view of this subject as Prof. Adams. He complained that religionists had interfered with the researches of natural philosophers in this their legal domain.]

FISH PROTECTING THEIR YOUNG.

Professor Agassiz delivered some oral remarks upon the care which certain fishes take of their eggs and young. Having alluded to the lower species of fish, which lays its eggs and leaves its young, who never know parents, and rise but to be swallowed by larger species, he said that, when he arrived in this country, he heard of fish that did protect their young, but could get no further information on the subject. The Professor then proceeded to detail an accident which came under his own observation last May. When walking on the sea shore at———, he saw two catfish rushing from the shore to the water. He went to the place from which they started, and he saw a black mark formed where they had been. There were tadpoles in it, and by-and-bye he saw the two catfish return to the spot, and looking, as if to see if their spawn had been disturbed. They got on their nest again. He watched them for a while, and threw a stone to disturb them. They ran to the water as before; but in ten minutes, they returned again; and in this manner he disturbed them, and they returned, four times, which convinced him that they were anxious to return to their young, and protect them. After a few other remarks, the learned professor concluded.

ON THE DEPOSITS OF COMMON SALT AND CLIMATE.

Professor Henry D. Rogers, said there is an intimate connection between the present basins of salt water and the existing distribution of the earth's climates—a connection which, fully established, promises to afford us, through a tracing of the distribution of the ancient saliferous doposits, much insight into the climates of the earth in the past periods. A sound geological theory teaches that the original source of the salt of the great ocean, and all the salt lakes, was in the clorides of the volcanic minerals and rocks of the earth's crust. The action of the descending rain is to decompose these rocks, and to dissolve and float away into the receptacle of the sea, the soluble salts which they contain. The geological revolutions shifting at successive times the waters of the ocean from their bed, have laid dry a portion of their sediments, leaving behind a part of the sea water to be evaporated, thus impregnating the strata with its saline ingredients. Thus we find, that all the marine deposits, however far removed at present from any ocean, contain an appreciable quantity of sea salt. In those regions of the globe where the prevailing winds are excessively dry, and in those alone, do we find the inland, caspians, receptacles of water without outlets, and all these caspians, without exception, are basins of saline water; and the reason of this is very obvious. The constant drainage of the circumjacent districts, has been bringing into these insulated basins fresh accessions of saline matter dissolved or leached away from the strata over which they flow, while the evaporation under an arid climate, carrying off the surplus water, and preventing its flowing on into the general ocean, has been the means of accumulating in these receptacles this constantly growing supply of salt. By this equilibrium between the drainage of the region and the evaporation, the waters have become at last so strongly impregnated as to deposit or crystalize the salt upon their margins. Following up the same general fact of the incessant solution of the rocks, we behold in the great sea itself, a basin like the other salt ones, which has no outlet for its surplus supplies but back again by evaporation into the atmosphere. Looking, then, at the primeval condition of an atmosphere of an aqueous vapor just after the period when the earth's general temperature was incompatible with this state of water, it was a fresh ocean and not a salt one.

Professor Agassiz, upon the conclusion of Prof. Rogers' observations, passed a high compliment on him, and remarked that the facts and views unfolded, did, as the author said, furnish a new means of interpreting the ancient climates of the globe. From the fossil vegetable and animal organic remains, geologists have long felt themselves provided with sensitive indexes of the past temperature of the earth at different periods, but never until now had they been supplied with a hygrometer; this, Professor Rogers has furnished.

ICE ON LAKE CHAMPLAIN—WHY IT DISAPPEARS ALL AT ONCE.

Professor Olmsted said—I have been informed by persons who have lived at Plattsburgh and other places on Lake Champlain, that a singular fact is observed there on the breaking up of ice in the spring, usually in the month of May. It is that the ice all disappears at once. On rising in the morning, for example, the lake is entirely clear of ice, although the previous evening it was seen completely bridged over. Being requested to explain the fact, I was led, on reflection, to ascribe it to the absorption of water by the ice, until its specific gravity exceeds that of the water, when it sinks to the bottom. Although ice, on account of its crystaline structure is lighter than water, yet the solid matter itself is heavier than water, so that when the interstices are filled with this fiuid, the mass has a specific gravity exceeding that of the latter. Thus, sponge, when fully saturated with water, will sink in it; and if ice, in a porous state, be placed in water, it will also sink. If the question be asked, why this fact is peculiar to the ice of Lake Champlain, and why the same does not occur in other lakes which freeze over in the winter, the answer is, that on account of the severe climate of the north part of Lake Champlain, the ice remains on the lake until the sun has advanced very far northward, and the surrounding country has become quite warm. By alternate freezing and thawing, the ice becomes granulated, and very porous, and, consequently, very absorbent of water. When this process has reached a certain point—that is the moment when the specific gravity of the ice, thus soaked with water, exceeds that of the medium itself—the whole sinks, and disappears at once.

Doctor Hare dissented from the explanation given by Professor Olmsted.

Professor W. B. Rogers dissented from the view expressed by Professor Olmsted, as to the density of ice and maintained that there is no reason to doubt that pure homogeneous ice is specifically lighter then water. The idea of water being able to enter between the molecules of this solid is quite inadmissible. A volume of ice, in its pure crystaline state, when free from bubbles, is no more porous than a crystal of quartz or felspar. In either case, the volume of the mass is to be regarded as made up of the material atoms, and of interstitial space, and the specific gravity includes the whole. These spaces between the molecules of a mass, if penetrable at all by the liquid, could not be penetrated without an entire breaking down of the mass. This species of interstice, proper to the crystaline character of the mass, is not to be confounded with the pores or cavities in sponge, or other cellular bodies.

[It has recently been demonstrated by Prof. Farrady, that the ice found in our lakes is not only not porous, but contains no air whatever, it is a perfect solid, but for all this who can give a better explanation of the sudden sinking of the ice than that given by Prof. Olmsted. We have seen the ice granulated exactly as described and there are more lakes than Champlain where the ice disappears so suddenly.

GOLD FORMATIONS.

Some observation on the gold formation of Maryland, Virginia and North Carolina, were made by Professor W. R. Johnson, of Washington.

Prof. W. B. Rogers followed Mr. Johnson in some observations upon the geological position of the auriferous belt of the United States, and upon the conditions under which the gold is found in the veins at the surface and at considerable depths. He stated that the general direction of the auriferous beds corresponds to that of the old metamorphic rocks with which they are associated. The quartz veins usually run parallel with the bedding of the adjacent strata, but occasionally in the obliquely transverse direction—often they are single, but sometimes ramifying. It is evident that the great mass of these igneous material rose to the surface between the dividing planes of the talcose and micacious slates in which they occur. Prof. R. called especial attention to the very different condition in which gold is found in the superficial parts of the vein, and at depths below the reach of meteoric agencies. Near, and at the surface, the quartz is cavernous, exhibiting the cavities formerly occupied by sulphuret of iron, with which the gold was intimately blended. In them are frequently found granules and spangles of gold; but the sulphuret of iron has been decomposed and removed. The resulting oxide of iron is found collected along the sides or walls of the vein forming sometimes valuable beds of iron ore, while much of the gold is left in grains or small segregated masses in the body of the quartz. In this condition, its separation is comparatively easy, nature having already removed the sulphuret of iron, the ingredient which retains the gold with most tensity under the ordinary purifying processes. Prof. R. urged the importance of keeping in view this difference between the associations of the gold near the surface of the vein, and at considerable depths, as it plainly indicates the actual productiveness of the veins. Mines might be expected to diminish, after reaching some depth below the surface, even while the real amount of gold present in the rock would probably be as great, or greater, below than the surface.

The Atlantic made her last passage from Liverpool in eleven days and two hours. The Atlantic and Pacific are doing wonders. The regularity of their trips is what we look at.

John Inman, late Editor of the Commercial Advertiser, this city, died on last Friday.

LITERARY NOTICES.

HEADLEY'S WORKS.—Mr. John S. Taylor, publisher, 43 Nassau st., has just laid upon our table two more works by that pleasing writer—Headley—which are worth purchasing by any one. Rambles and Sketches, is the title of one of the books, and it contains many engravings of the subjects to which it relates—his rambles through and about Paris are worth the price of the book, but occupies only one chapter out of twenty-four which are contained in the book. Luther and Cromwell is the title of the other book to which we have referred, although besides giving the life of Luther, and the letters and speeches of Cromwell, it contains a chapter on Thier's history of the French Revolutions, Allison's history of Europe, and the one progressive age, etc. To any one who has not seen Headley's Miscellanies we would recommend the two works above, but those who possess the Miscellanies have in them the contents of those two books.

ICONOGRAPHIC ENCYCLOPEDIA.—Part 11 of this unrivalled work on Science, Literature and Art, is just published, by Radolph Garrigue of No. 2 Barclay st., this city. It contains splendid engravings of the Masonic Ceremonies, Crusaders, Ancient Hawking, the Remish and Mahomedan Religion,—the Inquisition with its terrors, Heraldry and Scenes in Ancient chivalry. This part is rich in illustration—the plates alone being worth the price of the number.

MARINE AND NAVAL ARCHITECTURE.—Number 8 and 9 of this splendid work on the "Theory and practice of Shipbuilding" by John W. Griffiths, Naval Architect, are now published. They contain descriptions of modelling and important rules in the practical operations of the art, and directions in the successive stages of advancement in the building of vessels. It is not possible to give even an outline of the contents of these numbers, we can only speak of their merits, and will sum them up in a few words, "this is *the Book* of Naval Architecture." Every ship carpenter, and every man engaged in the marine and naval affairs, should subscribe for this work, if he would be wise for himself.

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History and Construction of the Thermometer.

(Continued from page 395.)

The Florentine thermometer was about that time introduced into England, and duly appreciated by both Boyle and Hooke. The specimen seen by these philosophers was filled with colorless spirit, but they made use of the spirits of wine, tinged by cochineal "of lovely red," and, says Boyle, "'tis pleasant to see how many inches a mild degree of heat will make the tincture ascend in the cylindrical stem of one of these useful instruments." Boyle was fully aware of the imperfection of the scales hitherto applied to the thermometer, and sought to discover a remedy. He proposed to obtain a fixed point in the scale by marking the height of the liquid in the stem of the instrument, when the ball was placed in thawing oil of aniseed ice, because the former could be obtained at any season of the year. His method of making two or more comparable thermometers, however, would be found extremely difficult, if not impossible in practice, it is best explained in his own words, —"For if you put such rectified spirit of wine into a glass, the cavity of whose spherical and that of its cylindrical part, are as near as may be, equal to corresponding cavities in the former glass, you may by some heedful trials, made with thawed and re-congealed oil of aniseed, bring the second weather-glass to be somewhat like the first; and if you know the quantity of your spirit of wine, you may easily enough make an estimate by the place it reaches in the neck of the instrument, whose capacity you also know, whether it expands or contracts itself to the 40th, the 30th, or the 20th part of the bulk it was of, when the weather-glass was made."

Boyle mentions that an ingenious man (alluding to Hooke) had proposed the freezing of distilled water as a fixed point in the scale of the thermometers; but he himself, evidently, gives the preference to the congealed point of aniseed oil. Dr. Halley proposed to regulate the scale by the uniform temperature of such a cavern as that under the Paris Observatory, or the point at which spirit boils; and he also suggested the fixing of the scale from the boiling water. This point he considered as an invariably fixed one, not liable to alteration from external circumstances; and the same idea was entertained by Amontons. With a single point so fixed, the method attempted by Boyle, Halley, and Hooke, was to calculate the proportion of the stem to the ball, and thus to determine the increase in bulk of the whole liquid by a certain temperature.

Dr. Hooke appears invariably to have used in his thermometers spirits of wine "highly tinged with the lively color of cochineal, which he deepened by pouring into it some drops of common spirits of wine." The sagacity of the illustrious Newton saw the importance of improving the thermometer. He appears to have been early aware of the inconvenience of spirit as a thermomic fluid, and employed linseed oil to fill his thermometers. It has the advantage of being able to endure a considerable temperature without endangering the bursting of the tube, and therefore can be applied to a higher range of temperature than a spirit thermometer. It has the disadvantage, however, of being more sluggish in its movements, and to adhere much to the inside of the tube, while it differs greatly in its fluidity at different temperatures. Newton perceived the convenience of having two fixed points in the construction of the scale; and he used the freezing and boiling points of water as the most suitable for this purpose.

Newton continued his scale of temperature farther by observing the rate of cooling of heated bodies, until he could apply his thermometer to them, on the principle that equal decrements of temperature take place in equal times. It was thus he estimated the temperature of iron heated to the utmost intensity of a small kitchen fire equal to 194°, and in a fire of wood about 200 or 210°, of the same scale.

It is perhaps unfortunate for the philosophy of heat that more sublime and dazzling objects drew Newton's attention to other pursuits. Though he led the way to just views of the subject, neither he nor any of his predecessors appear to have been aware of the influence of the varying atmospheric pressure on the boiling points of liquids, nor do any of them seem to have considered that the varying expansions of the thermomic liquids at different temperatures, and the expansion of the glass of the instrument, must have materially affected every attempt to subdivide the stem of the thermometer into fractional parts of the whole bulk of the contained liquid. One of these questions, however, seems to have engaged the attention of philosopers about that time, viz., whether equal increments of temperature caused equal expansions of the thermomic fluid. Dr. Brooke Taylor tried the experiment with an oil thermometer, by mixing definite portions of hot and cold water, and measuring the temperature of the mixture. His conclusion was in the affirmative, but the delicacy of his instruments was unequal to the solution of this nice problem, although he has the merit of pointing out how the problem is to be solved.

Geoffrey afterwards made some improvements in air thermometers worthy of notice, which appear better than that originated by Boyle, inasmuch as they were not affected by atmospheric pressure. He describes his tube as without any opening, except one, which descends almost to the bottom of the ball, and then dips into a small portion of colored liquid. It is not stated how the ball was joined to the tube, but it was most probably by cement.

M. Amontons saw the importance of fixed points in the thermomic scale, and proposed to obtain them from the boiling point of water. His thermometer consisted of a tube four feet in length, ending below in a ball bent upwards, and open at the extremity. The measure of the temperature was the elasticity of a given portion of air included in the ball, and subjected to a pressure equal to two atmospheres, by adding to the usual atmospheric pressure that of a column of mercury of 28 French inches, which is equal to 56 inches under the usual pressure. The idea of Amonton was a fine approximation to a universal standard for a thermomic scale, but the instrument was liable to such objections that it was not used to any extent.

While these experiments were going on in France, important improvements were made in Holland and Germany by the introduction of quicksilver as the fluid. Science is indebted to Reaumur, the celebrated astronomer of Dantzic for this improvement, to whom the invention is ascribed by Boerhave, as well as the first idea of the scale now known as that of Fahrenheit. Thermometers of this construction were made by Gabriel Fahrenheit, a native of Dantsic, in so perfect a manner that he has generally been considered the original inventor. They have maintained their acknowledged superiority to this day in many countries—especially in this country and Great Britain.

The great advantage of Fahrenheit's thermometer over every other previous invention, consisted in its applicability to a greater range of temperature—from the freezing to the boiling points of quicksilver; in its not soiling the containing tube, and in its receiving the impression of heat and cold more readily, while its density rendered capillary tubes filled with it, perfectly visible; and thus the instrument became more portable and delicate; at that period it out-vied all other scales in accuracy. It still possesses such peculiar advantages that the observer is seldom troubled with negative degrees; and from the number of its divisions has rarely to use fractions of a degree in ordinary operations.

No other changes of importance have been made, worthy of notice, without extending this history to an unreasonable length.

[Remainder next week.]

The export of British wrought articles from Great Britain is equal to six times that of the raw produce.

16,000 vessels come yearly into the harbor of Liverpool, and carry out 2,400,000 tons of goods.

Patent Cause Decision.

Subjoined is a principle of law as laid down by the Circuit Court of the United States, Eastern District of Pennsylvania, by Judges Grier and Kane, on a motion for a special injunction, in the case of Thomas Blanchard vs. Biddle Reeves, Charles Reeves, Isaac B. Eldridge and Wm. A. Stevenson. July 15th 1850.

"Indeed the difference of opinion which appears in this case, seems to result from the construction given to the specification of complainant's patent, and in assuming that the only method proposed by Mr. Blanchard is, that the friction wheel or tracer describes a spiral line over the whole surface of the model and causes the cutters to act in a singular direction. But we think that is too narrow a construction of the patent. In every combination of mechanical devices to perform a certain function, so as to constitute a new machine, or a new and useful invention, it is impossible to enumerate in a specification, all the various modes by which the machine may be made to operate, so as to produce an useful result! many of its parts may be changed or substituted by other mechanical equivalents or devices, while the original idea, principle or mode of operation of the inventor is manifestly preserved. The inventor usually sets forth, what he conceives, the best form or mode under which his machine may be used to produce the required result. In order to ascertain the true nature and value of his invention, we must separate the substance and principle of it from its accidents—its essence from its mode. A mere change in the latter, while the former are retained, will not acquit the party in making it, from the charge or guilt of pirating the invention.

The machine of the complainant is described as 'an engine for turning or cutting irregular forms out of wood, brass &c., called Blanchard's self-directing machine.' The invention consists in arraying and combining together—1st, a model; 2nd, a guide; 3rd, a cutter wheel, and 4th, a rough block in such a manner, and under such relations that, when in operation, the guide shall be made to touch successively every part of the surface of the model and that it shall at the same time govern the cutter wheel, by permitting or causing it to advance or recede from the axis of the rough material, having in this, a constant relation to the distance of the face of the guide from the axis of the model: By which means the cutters remove, by their own independent motion, from the rough block, every part of the same which projects into or beyond the line or path of the cutters in their revolution; so that the rough block is at length reduced to a certain conformity and resemblance in shape to the model. The mode of producing this result in the concrete, which we have thus stated in the abstract, and the combination of mechanical devices or agents, necesary to reduce it to practice, is fully set forth in the specification. Now the machine of the defendants contain the four essential members of the complainants machine which we have enumerated, viz., the model, the guide, the cutter wheel, and the rough material combined in the same relations, and effecting each other in the same manner substantially. But in the subordinate agents and devices by which these four principle members are made to operate, provision is made for the following differences in defedants machine, viz.,—in complainants machine, the model and rough block have a continous rotary motion connected with a lateral motion; the former produced by belts and pulleys the latby screws; under these combined motions, the guide traces up the model a spiral or helical path, and the cutter wheel likewise removes the superfluous material from the rough block in a spiral course. In defendants machine, the model and rough block rotate by an intermittent motion, and move laterally by a rectilinear reciprocating motion, the former being produced by a rag or ratchet wheel and the latter by a crank.

Now it is true that the complainant's specification describes a machine, which effects its result, by a combination of lateral and rotary motion to form a helical course or track in the operation of the machine; but is that the essence or substance of his invention, or is it not merely an accident to that particular form of the machine described. Suppose this lateral motion, which combined with the circular constitutes the helical, had been reduced from almost nothing to 0, and the cutter, after performing the absolute circle, had shifted by an intermittent motion, so as to move in parallel rings; would that have altered the principle, essence or substance of the inventors machine, or changed it? in one of its accidents only, and that for the worse? There could be but one answer to this question. The only difference in that case is that the paths and traces of the cutter, with the model and rough material, is reduced to an absolute circle, and then changed to an intermittent motion. The change of form in the tracer, from a circle to the segment of a circle, or mere straight line, is of no importance; it is but accomodating it to its lateral motion. The substitution of the ratchet wheel for the belt and screw is but a change of equivalents, to suit the changed motion of the tracer and cutter wheel; such a change in subordinate agents and devices, affecting the motions of the model and guide in the figure of their path, or the relative terms of their movements, it nowise changes the principle, essence, substance or character of the machine. We cannot shut our eyes to the fact that the defendants have pirated the invention of the complainants in all its essential parts." Injunction granted.

The respondents in this cause first seemed disposed to proceed further with the defence, by asking security, and a jury trial, although told by the court that, there existed no doubt whatever in the mind of both judges as to the accuracy of the opinion expressed. The complainant offered to give security to any amount: but previous to filing any bond, the respondants demed the best policy to be, to agree to pay the complainant the regular price for all the work they had done; and consent to a perpetual injunction, without further litigation; thus saving to themselves any further costs of suit.

Philadelphia has been a battle ground of the Blanchard Patent: but after a five year siege it has come off completely victorious. This is an honest patent and deserves its success.

There is a prospect however of another suit against one Russel; who will be immediately subpœnaed, as soon as it is ascertained that he persists in putting up and running his machine. He has been notified to desist, and it is to be hoped, for his own welfare, that he will be governed by a proper spirit.

The Building for the Great Fair.

It is stated that the building for the exhibition of 1851 will contain five hundred miles of window sashes, one hundred miles of putty, 24 miles of zinc guttering, eight miles to drive under cover. The building will be wholly of glass, wood frame, and iron pillars. In one position the spectator will be able to see one thousand feet before him in one unbroken view. It is believed that the building will be so superb that the public will be the first to oppose its removal. A writer in the "Builder" states that one hundred and fifty tons of putty will be required to make the building.

The Sweedish Nightingale, Jenny Lind, arrived in the Atlantic on last Sunday. Thirty or forty thousand persons rushed and pushed themselves, some with their noses in the gutter, others with their hats in squash, to get a sight at her. At night there was a concert in her honor at the Irving House,—Sunday was disgraced sadly in New York. There are tens of thousands among us, who have not the right spirit for freemen—they obey no fixed principles of true self-mastership and dignity, without which they cannot be true republicans.

A railroad is to be constructed from Cleveland to Toledo, Ohio, by the shore of the Lake, a distance of 110 miles. It is estimated that the cost will not be above $17,283 per mile.

One ton of steel produces 1,440,000 pens.

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New Inventions.

Improved Scythe Snath.

Mr. Erastus S. Clapp, of Montague, Mass., has invented a very beautiful improvement on the manner of setting and fastening scythes in their snaths, for which he has taken measures to secure a patent. The improvement is made in the butt of the snath whereby by turning a small screw nut, the scythe can be taken out, fastened, and set to any point, by raising or lowering its heel to suit the mower and for mowing on level, and uneven ground. No wedge nor clasp is used, the outside of the butt of the snath is smooth as any part of it.

Battin's Coal Breaker.

Our worthy exchange, the Pottsville Register and Democrat, of the 31st ult., asks our opinion about the validity of Mr. Battin's claim. The claim is for two toother rollers revolving in opposite directions, with the teeth of one playing in the open spaces of the other, to break the coal.

If two rollers, so constructed and so combined were never employed for a like purpose before Mr. Battin so constructed and employed them, then his claim will stand in law; if not, he will be defeated. As a suit for the infringement of this patent will come on in the October Term of the U. S. Circuit Court, we do not like to express our opinion at present, as it might injure the parties concerned.

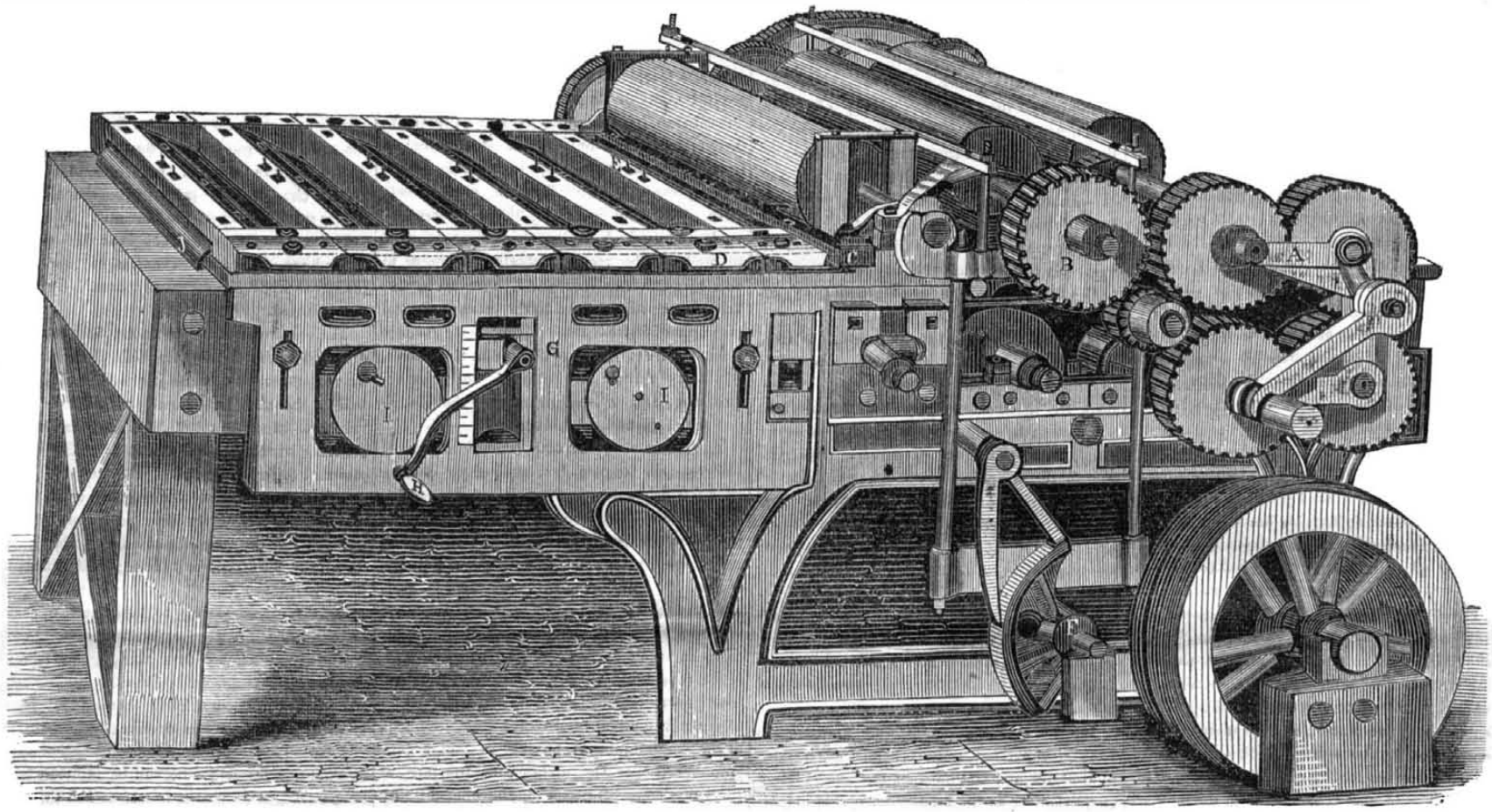
Wonderful Machine.

Tyler Davidson, says the Cincinnatti Commercial, yesterday, showed us a wonderful specimen of artistic ingenuity, which came about as near to perfection in its imitation of nature as it is possible for human skill to approach. It was a small box, containing a delicate combination of machinery, similar to that of a watch, which, when wound up, caused a beautiful little bird, with the richest plumage, to start out from the lid, and after warbling sweetly for a while, return to its place, the lid closing after it. The bird seemed endowed with life, moving its bill to the time of its notes, and fluttering as it sang. It was manufactured in Geneva, and cost one hundred guineas, or $500.

Improved Candlestick.

Mr. James Manning, of Middletown, Conn., has invented a very useful improvement on Candlesticks, for which he has taken measures to secure a patent, and which will be found to be exceedingly useful. It is a small top plate with an eliptical hole in it, and this slides round, so as to bring the greater or less diameter of the hole of the plate in a line with the opening down in the shank. To look at the candlestick it would not be noticed as differing in any manner from those in common use, but it can firmly retain candles of any thickness, the long eights and short sixes equally well. It is a very good and simple improvement on candlesticks. Messrs. W.& B. Douglas, of the above place, are the assignees.

ALLEN'S PATENT PLANING MACHINE.



We here present a perspective view of the Planing Machine invented and patented in 1849, by E. G. Allen, of Massachusetts. The construction of this machine is peculiar in many respects. It is what may be called a stationary planing machine, it having stationary cutters, with feeding rollers arranged and combined in a manner entirely new in such a machine. In hand planing, the board is stationary while the plane receives a reciprocating motion, and if the work done in that way is of the best quality, surely if machinery can be made to operate on the same principle reversed, economically, the invention must be a good one. Hitherto this has not been done, hence rotating planing machines have generally been allowed to be the only kind which could work economically. The true test of the value of any invention whatever, is its operative use, not for a few hours or a few days, but a sufficient time to test its wear and tear qualities, and the average amount of work it can produce. With respect to the practical qualities of this machine we cannot say anything personally, but we have a large number of certificates from those who are able to judge of its merits, and who have tested its qualities. One of these we will give at the end of this, and in the mean time we will describe its parts, so that a good understanding may be obtained of its construction and operation.

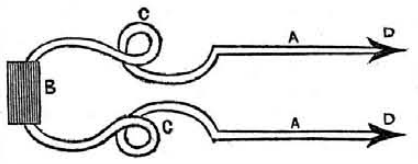
A is a universal joint connection that permits the upper feed rollers to rise and fall, but still keeps them in gear, and thus allows them to act on the board fed in between them to force the said board through the machine against the cutters, to plane it. B is a wheel gearing with a pinion on the lower roll; C is a part of the frame on which the upper feed rolls are mounted, and in this part of the frame is placed a stationary adjustable mouth groove. E are set screws to regulate the mouth grooves. D is a knife block; it is made of ron; G are the sides to which any suitable number of knife blocks, are secured; I I are eccentrics, and on their shafts are gear wheels connected by one on the crank shaft, H. This crank can raise and lower all the knives at once. The bed plate is formed of rollers, J being one of them. There are plates between the rolls to support the board, and thus the board passes, as it were, on a plane, part of which rolls to relieve the friction. F shows a lifting apparatus, which changes the position of the upper feed rollers, and they can be set from one-eighth to five inches apart. Each knife block has an adjustable mouth groove put into its back. It will be observed that the only part of this machine which moves is the feeding motion of the rolls. This is done by a belt from a water wheel shaft, or that of a steam engine, passing round the large band wheel—this, or another arrangement for the same purpose, is obvious to all who are acquainted with machinery. This machine is all made of iron, excepting the knives and those parts which have to be forged of steel.

The following is one of the certificates which we alluded to above:

Boston, June 4, 1850.—This certifies that I have had a large amount of Lumber planed in E. G. Allen's Patent Planing Machine, and the work has been done more satisfactorily than I ever had it done by any of the well known rotary cutting machines. I can say far better, it plains about three times faster, and leaves a most perfect surface. I take pleasure in recommending this new and valuable invention to the public as worthy and meritorious. (Signed,) Nath'l Holmes, Contractor and Builder.

Mr Henry Sizer, of Springfield, Mass., is General Agent for any part of the United States. Those who wish to purchase machines or rights to use them for this State must apply to him. A number of these machines are in operation, one may be seen at the corner of Charles and Cambridge sts., Boston.

A Galvanic or Electric Harpoon for Paralizing Whales.



A A are two common harpoons connected to a battery, B, by chains, C C, said chains may be bound in a cord, and said cords and harpoons (excepting the points and barbs D D) insolated in any nonconducting flexible substance. Both harpoons are cast simultaneously, to produce the desired efiect.

Hubble N. Hale.

Cato Four Corners, Cayuga Co., N. Y.

Mr. Hale publishes the above with the object of obtaining assistance to carry out his invention. He has communicated with the officer of the Inventors Institute, of Baltimore, who have spoken very favorably of it.

Crank Indicator.

Mr. Samuel B. Hutchins, engineer on the U. S. Steam Ship Ontario, has invented and applied for a patent on a neat apparatus to enable the engineer to tell at any moment the exact position of the crank on the shaft.

English Plate Glass.

Since the repeal of the excise duties in England on the manufacture of glass, which took 40 per cent. of the cost, the business has increased almost beyond belief. Larger and better plates are made than in any other country, and at a greater profit. The exports are 110 per cent. In 1846, not a single foot of plate-glass was exported to America; in 1847, more was exported to the United States alone than had been exported to all the world in 1846.

When will America manufacture her own plate glass? She has plenty of the materials, and surely German artisans can be found who will conduct the business. The operatives employed in England were at one time all Germans; their wages were very high.

Sudden Death of an Inventor.

Prof. Johnson, of St. Louis, Mo., arrived in this city a short time ago, on his way to Europe, to patent a new and valuable discovery of rendering rope perfectly anti-combustible and much stronger. He was taken ill on last Thursday, the 29th, and was a corpse the next day. We hope this useful discovery is fully secured to his family, and that they will not in any way be defrauded out of the benefits of this invention.

Solvent for Old Putty and Paint.

Soft soap mixed with a solution of potash or caustic soda; or pearlash and slacked lime mixed with sufficient water to form a paste. Either of these laid on with an old brush or rag, and left for some hours, will render it easily removable.

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Scientific American

NEW YORK, SEPTEMBER 7, 1850.

The World's Industrial Exhibition.

In the month of May, 1851, the representatives of the genius, skill and industry of all nations are to assemble in Hyde Park, London. Never, in the whole history of the world, has such another event happened. We have something of the same nature in the Grecian Fairs—which were sacred in peace and war. But such an event, as an exhibition of the industrial products of all nations, never happened, and could not happen in "the days of old." Without partiality to country or kin, prizes of no mean value are to be awarded, to the successful competitors. We hail this event as a new era of better things for *the workers*; "by their works ye shall know them." Military reviews and the splendid pageants of fighting men were at one time the only subjects fit for exhibition before royalty—the only favorite displays worthy of the attention of kings, queens and the so-styled *great ones* of the earth. We hope that better views of the true duties of men to one another, as men, will be promoted by the contemplated exhibition, that it will be the means of elevating, at no distant day, the eminent mechanicians to their true position in the eye of the world. At present, the *greatest* men are those who have the largest bags of dollars, while those who make all the wealth—for *it* is the product of industry, are looked upon as *rather inferior* beings. It is to the honor of Britain that she has contemplated this Great Exhibition. At present she is the greatest workshop in the world, and well does her *wise* men know that she is more indebted to her Watts, her Cartwrights her Arkwrights, her Stephensons and Napiers, for her wealth and power, than to her nobles, statesmen and heroes.

Some have endeavored to persuade Americans that the object of the Industrial Exhibition is to collect the inventions of other nations in England, so that she might appropriate the ideas of others to her own advance ment. This is true in one sense, or she would not take the trouble of such an exhibition, and award prizes to the exhibitors. But that man is surely short-sighted, who does not perceive that the exhibitors of other nations will gain in the same way from the British exhibitors,—yes, and will gain more than the British in this respect. How, some one will ask, can they gain more? The answer is easy and plain. There is more machinery in Great Britain than in any other country—she is by far the largest manufacturer, and viewing her as the inventor of the steam engine, the power loom, the spinning-jenny, who does not know that she will there exhibit many machines of great ingenuity, an examination of which cannot but benefit the people of other nations who will be there. The Commissioners appointed, are men of integrity, and one of them, Robert Stephenson, we know, is as distinguished for his affability and generosity, as he is for his engineering knowledge and attainments. We also know another thing, and that is, that foreign manufacturers, will appear there under more advantageous circumstances, in fine raised work at least, than British manufacturers. This we could show, as we know all about it, if we had room in this article.

Some have been foolishly broaching the question of bringing over the Exhibition from London to America, as a grand Yankee speculation. This no company in this city can do, unless they can raise some millions for the object. We don't like any speculation money-making ideas in connection with such exhibitions. We are advocates of the Industrial Exhibition, because we believe such affairs have a tendency to break down national prejudices and advance art and science among the nations.

We also hope to see a World's Industrial Exhibition held in America at no distant day. It is now some time since we advocated this project, and we have some satisfaction in knowing that the views we expressed, met the hearty approbation of a number of U. S. Senators.

As we have the means of obtaining more information about such things than any other person in the country, it is our opinion that the display of American products will not be so large as we could desire; nevertheless, there will be some works which will be an honor to our country. Some of these we have acted as agents for, in securing them by patent, in England, before they could be exhibited, and we know of some machines now in the course of construction, which will, we are certain, be objects of admiration among a world of others.

The Local Committee appointed by Governor Fish, to examine models, &c., for the London Exhibition consists of Hon. Luther Bradish, Prest., E. P. Prentice, Esq., Hon. A. Van Bergen, Chas. Henry Hull, Hon. Jas. Tallmadge, Hon. Wm. Buel, A. Chandler, Esq., and B. P. Johnson, Esq., Sec.'y. This committee will have a tent at the State Fair, to be held at Albany on the 4th of this month (this week) to examine any machine upon the ground, intended for the London Exhibition. This committee will soon issue a circular, which we shall present to our readers, containing all the requisite information on the subject.

The expenses of exhibitors at the London Exhibition will be very high, and we cannot avoid advising all those who have not plenty of means, not to go, for if they do they will be disappointed, but those who have plenty of funds, will no doubt return highly satisfied.

Improvements in Locomotives--The Grand Object Accomplished.

It is but a week since we wrote an article about "improvements on railway travelling." In it we stated that "the absence of smoke would be a great improvement," and "we hoped that a locomotive burning anthracite coal would soon supersede the wood-burning engine." Little did we think at the time that an engine was in our city which embraced those desirable qualities; but so there was, and the ink was scarcely dry on our paper, when we received an invitation from the inventor, Mr. F. P. Dimpfel, engineer, and a noted inventor of Philadelphia, to witness the performance of his new locomotive on a trial trip on the Hudson River Railroad. On last Thursday, along with a small but select party of engineers and men of scientific attainments, we were transported with this locomotive from 31st street to Dobb's Ferry, where we were refreshed mentally and physically, with that which was good to the taste, on the one hand, and "a feast of reason and a flow of soul," on the other. The running time of the locomotive was forty miles per hour, but that is not the point to which we wish to direct attention—it is the merit of the engine as an anthracite coal burning one, without smoke, or sparks. Mr. Ross Winans of Baltimore has built locomotives for burning anthracite, but this one is an improvement, or rather it has an improved boiler constructed upon an entirely new principle, which enables the inventor to use anthracite coal without any rapid injury to the fire box, and to raise an abundance of steam with about only one half the quantity of coal ever used in any other engine to do the same work. To give an idea of the small amount of coal it consumes, we would state, that it drew 40 cars loaded with coal, weighing 200 tons, on the Reading Railroad, a distance of 58 miles, and only used one and a half tons of coal. The construction of the boiler is peculiar. The fire box is surrounded entirely with water, and there are a series of horizontal copper tubes inserted in a back plate, connected with a back water chamber at the front end, and these run forward, and are bent up in the fire box, inserted into and projecting above the crown plate. The water comes from the chamber or division of the boiler, mentioned, through these tubes, in a current approaching from the coldest part of the flue, to the hottest part in the fire box, and then curves up above the crown plate. This is the right principle of action in a steam boiler, for as the cold water approaches from a less to a greater heat in the fire box, it meets with greater degrees of heat to absorb during every step of its progress, hence the molecules of water are constantly changing both their condition and position, allowing of no waste of heat whatever, and preventing the destructive action of the fire upon the tubes. The bent part of the tube allows for the expansion and contraction of the metal, and Mr. Dimpfel has also a pump inside, worked by a rod from the engine, to keep up by mechanical means, a continual current through all the boiler. We examined the engine and fire box after we came in, and were fully convinced that all the objections to the use of anthracite coal as "being eminently destructive to fire boxes," have not only been removed by Mr. Dimpfel, but he has produced an invention which will save at least 40 per cent. of fuel also. The benefits which this improvement will confer upon railroads, is incalculable. Along with a saving of the fire box, and the saving of fuel, Mr. Dimpfel has attached his peculiar blower to return the carbonic oxide to the fire, so that there is not the least particle of the fuel lost, a perfect combustion of all the carbon is effected, —hence nothing but carbonic acid gas escapes at the chimney, and this is of such a nature that it rises rapidly, when heated, above the cars, and thus passengers can ride in them and feel no more unpleasant smell, than they would if careering in a balloon. This certainly adds fifty per cent. to the comforts of railway travelling. Mr. Dimpfel has secured patents for his invention, both in America and Europe.

We cannot forget to mention the new and splendid car, in which we were carried. It was built at the works of our friends, those first-rate car makers, Messrs. Tracy & Fales, Hartford, Conn. This car was highly admired both for the solidity of its construction and the richness and taste of its decoration.

Water for Charleston.

A series of able articles, by Robert Mills, C. E., have appeared in the Charleston Mercury, about a proper supply of good water for that city. We have read these articles with a great deal of interest, and we hope they will be the means of arousing the attention of the citizens of Charleston to action in the matter. A city is ill off, indeed, which has not a plentiful supply of good water. It may be that the failure of the Artesian Well, in Charleston, has thrown a damper upon the spirits of her citizens, but it is perhaps as well that it has failed, for it has been found by experience that no dependance can be placed upon some Artesian wells for a permanent supply. This is the case with those in London; they do not supply one half the quantity now that they did when first opened. The supply of water upon the plan proposed by Mr. Mills, viz., to conduct river water in a canal to the city, is not an enterprize of uncertainty—there is no hazard about it. The question is only one of dollars on the one hand, and plenty of water on the other. Wherever it can be done, the supply of water to cities, by gravitation (a canal gently inclined) is the best and most economical plan in every respect.

A Patent Wanted. Who would have Believed it?

A bill is now before the *House* of Congress to extend Jethro Wood's Patent for a Cast Iron Plow. A bill for this very object was defeated last Session, and here they are at the same job again. Farmers! look out for your Representatives. When such bills come up they should send an address to their constituents, calling for meetings, without distinction of party, to hear *their* voice on the subject. The bill has been laid on the table for the present.

The Inventor of Pegged Boots.

The first pair of pegged boots made in America was by Joseph Walker, of Hopkinton, Mass., who is still, it seems, in the land of the living. He made pegged work for ten years without competition, when others, seeing the business a profitable one, commenced to make pegged boots and shoes also. It now gives employment to 60,000 inhabitants in Mass., and the trade amounts annually to $18,000,000. See what Joseph Walker has done for his country.

How to Arrest Cholera.

The Louisville Journal has a long and able article on the mode successfully employed in that city to arrest the cholera. Twice the cholera broke out there with virulence this year, and twice it was banished. To Dr. Theodore L. Bell, the citizens of Louisville are indebted for deliverance from the fearful pestilence. The measures adopted for this purpose should be known to all:—The spots where the malaria generated was thickly strewn over with sand and then covered with lime, and all the inhabitants removed from ground floors. This process never failed to stop the cholera in Louisville, in a few days. This shows that cholera is in a great measure under the control of laws well known.

Commissioner of Patents.

It is rumored that should the Senate refuse to confirm Mr. Ewbank, this office will be tendered to Samuel G. Goodrich, Esq., better known as "Peter Parley."

[The above we extract from an exchange. We have seen quite a number of paragraphs about this one and that one getting the appointment of commissoner of patents, but among all the names mentioned, we have not seen one that would, in our opinion, fill the office like the present one. Certainly Mr. Goodrich, good fellow as he is, has never had any experience in the least to qualify himself for such an office. To be a commissioner it requires a man to understand both law and mechanics.

The above was penned before we received news of Mr. Ewbank's confirmation by the Senate. It is well known that we spoke favorably of his appointment by the late President, because Mr. Ewbank was a scientific and practical mechanic—the first that ever had been appointed to that office. We have nothing to say about politics—we have no time to devote to them, and we never looked to that. We were pained at meetings which were held in this city to nominate a successor to Mr. Burke, before he was removed. Those who got up the meetings were the opposers, and have been the enemies, of Mr. Ewbank. He has been denounced as a foreigner and called all manner of names, but we can say of him what Benjamin West said to George the Third, in reply to some of his enemies, ("I have") he has "never eat the bread of idleness."

Particular Notices.

THE CULTURE OF COTTON.—We have a very excellent letter on the "Cotton Crop," from a distinguished planter in the South, which we will publish next week.

ELECTRIC LIGHT.—We have received a letter from Mr. Prosser, about the electric light, light, wherein he expresses his opinion that hydrogen, when passed through turpentine, must diminish very sensibly, its quantity. Since we got his letter we perceive that another person corroborates his views. We will present the substance of this letter next week.

Gigantic Marine Work.

The British government is constructing a harbor on the western coast of England at Holyhead, at the expense of $35,000,000. It is to be in the form of a crescent, with a width between the horns of three-fourths of a mile, while the sheet of water will contain 316 acres.

A great number of mechanics in New York have formed an Association to purchase 250 acres of land, within 40 minutes ride of New York, which is to be divided in quarter acre lots, for their buildings. This is a good plan —one which we recommend. Every man should endeavor to get a homestead as soon as he can, for it is not possible for mechanics to pay the rent for anything like a decent house in the city.

The Albany Knickerbocker commenced, in a new dress, the 8th volume of its existence on last Monday. Mr. Hastings says he commenced poor, but now in the language of an exalted poet, he is '*fat*, ragged and saucy." Well if any man deserved success for his enterprise and industry, it is our old friend Hugh Hastings.

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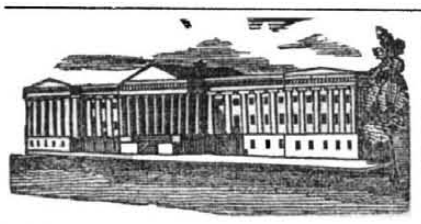

☞Reported expressly for the Scientific American, from the Patent Office Records.

LIST OF PATENT CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending August 27, 1850.

To C. L. Adancourt, of Troy, N. Y., for improvement in Expansible Bitts.

I claim the herein described expansible bitt, in combination with the single or double collar or tube, constructed and operating in the manner as herein set forth.

To Asa Blood, of Janesville, Wis., for improvement in Obstetrical Chairs and Supporters.

I claim an obstetric chair with its seat composed of sections hinged together substantially in the manner and for the purpose herein set forth.

I also claim a chair back hinged to the seat in such manner that it can turn both horizontally and vertically, substantially in the manner herein set forth.

I likewise claim the combination of the stirrups with the abdominal pad, substantially in the manner and for the purpose herein set forth.

To Stephen Burdett, of New York, N. Y., for improvement in turning up the Steps of Omnibuses.

I claim the bringing up of the step (it being properly prepared for the purpose) by the action of the spiral or other spring, upon the stepping off of the passenger, and the withdrawing of the driver's foot, and its connection with the brake apparatus; thus preventing boys or others from riding on it: the whole being attached to the body of the carriage, and operating substantially as fully set forth in the accompanying drawings and model.

To Harvey Camp, of Newton, Ga., for improvement in machines for Cutting Straw.

I claim, first, the manner of hanging the knives to the wheel as described.

Second, forming the knives with a hook-shaped end in the manner and for the purpose set forth.

Third, the collar on the projecting end of the mouth-piece forming a support for the detached end of the knife to rest against, as described.

To J. B. Chollar, of West Troy, N. Y., for improvement in Revolving Coal Grates.

I claim the manner of arranging bars or flanges around the cylinder, at an angle of any desired degree from the axis of the cylinder, so as to move the coal alternately in opposite directions, the same forming a fire grate, in the manner and for the purpose substantially the same as herein described.

To S. Clayton & Y. Baily, of Westchester, Pa., for improvement in Self-generating Gas Lamps.

We claim the extension of the wick into a ball or cavity, where the gas may be generated by means of jets, as above set forth.

To T. G. Clinton, G. H. & E. H. Knight, of Cincinnati, Ohio, for improvements in Stoves.

We claim, first, the arrangement after the manner and for the purposes herein described, of a grated or other more or less open fire back, whereby a roasting surface is presented to the interior of a stove.

Second, the provision substantially as described of dampers, whereby the roasting surface may be regulated or entirely closed up or opened at pleasure.

Third, the falling grate arranged and constructed substantially as described, so as to enable extension horizontally of the body of the fire for a boiling surface.

Fourth, the fire door having hopper sides and forming when extended, a canopy for the conduction of effluvia.

Fifth, the hopper or funnel-shaped door as arranged and here applied for the insertion of fuel.

To N. B. Cook, of Chicago, Ill., for improved Lock for Fire-arms.

I claim the seer in combination with the pin and shoulder on the trigger, by which arrangement the hammer, after being brought back by the pressure of the finger upon the trigger, is held in its position by the seer, while the trigger passes forward, and the piece is discharged by a light touch of the finger upon the trigger, securing deliberation and certainty of aim, or may be discharged by one continuous pressure of the finger upon the trigger, at the pleasure of the person using the same. And in these claims I wish to be understood that I do not confine myself to the precise arrangement of the parts herein described, but shall vary the same at pleasure, while I attain the same ends, by means substantially the same.

To B. P. Coston, of Philadelphia, Pa., for improvement in Shirt Studs and Buttons.

I claim constructing the shanks of shirt-studs and buttons in the manner and for the purpose set forth.

To E. B. Finch, of Peekskill, N. Y., for improvement in Stoves with Circular Shaking Grate.

I claim casting the seat of the fire box separate from the top plate of the ash box, having the bar carrying the centre pin for supporting the grate, cast with and forming part of the top plate of the ash box, substantially as described and for the purposes set forth.

To Albert Fuller of Boston, Mass., for improvement in cast iron Car Wheels.

I claim making the two plates which connect the hub and rim of a cast iron railroad wheel, in a series of lateral arching sectors connected by the curved partitions, &c., in the manner and for the purpose herein above specified.

To John W. Harrison, of Logansport, Ind., for improvement in detaching horses from carriages.

I claim the application to buggies and other vehicles drawn by horses or other draught animals, of a new and useful improvement on the swingle tree, which I entitle the safety swingle tree, together with its apparatus consisting of a lever and king bolt, a grooved headed screw bolt, a flat headed screw bolt, a force spring, and two stirrups combined, as above described, which, upon the king bolts being raised as above described, will allow the horse to become unhitched and to pass off freely from the same and every part thereof, without danger to the same or to persons therein contained: using in the construction of the same wrought iron or any other durable material that will ensure the desired object.

To J. R. Hooper, of West Philadelphia, Pa., for improvement in Grain Dryers.

I claim the arranging a series of drying plates one above another, connected by passages as described, in connection with the vertical shaft and arms thereon, curving alternately in opposite directions, combined and arranged in the manner and for the purpose herein fully set forth.

To James Hunter, of Blockley Township, Pa., (Assignor to J. Knight, of Providence, R.I.,) for improvement in the mode of cleaning and drying gum elastic or cloth bands in calico printing.

I claim the arrangement of the rollers and vat above described, for washing the india rubber bands or other endless blankets used in calico or other printing, said rollers being only partly immersed in water and other parts arranged and operated as set forth.

To Hazard Knowles, of Washington, D. C., for improvement in Saws.

I claim my improved saw teeth, constructed and operating substantially as herein described and represented, viz., the cutting edges of the teeth inclining outwards from plane or curved surfaces, a distance equal to the thickness of chip that each tooth is intended to remove from the wood, and being prevented from taking a deeper hold upon the wood, at the same time that they are strengthened by the said outer surfaces, in consequence of these surfaces being in a line with each other and parallel, or nearly so, with an imaginary right line, or circle, drawn over and touching the points of the saw teeth.

To A. R. Morrill & H. Baldwin, of Nashville, N. H., for self-acting adjustable feed-gear for drilling machines.

We claim the combination substantially as described, of the spined screw, the spined shaft, the smooth wheel, the toothed wheel carrying a nut, the arm, the catch, the small arm, the spring and the segment, so as to form a self-acting adjustable feed for boring or drilling machines.

To Tilgath Odeon, of Portsmouth, Va. for method of attaching yards to trusses.

I claim suspending the yard to the truss by means of linked and swivelled eye bolts, whereby the yard may either be allowed to hang freely below the eye which is swivelled to the truss, or may be slung upward and inwards towards the mast so as to bring its centre above the bowed end of the truss, in the manner and for the purposes set forth.

To A. F. Park, of Troy, N. Y., for improvement Electric Telegraph Manipulators.

I claim, first, the two guides, with their hook and detent spring, as described, in combination with the movable connecting points, and the type forms for letters, substantially in the manner and for the purpose set forth, the guides being disconnected as soon as the movable connecting point has passed them, thereby causing the finger key rods to resume their proper position to be again acted upon, and allowing the succeeding points to pass in their regular revolving course without coming in contact with the type forms.

Second, I also claim the manner of disconnecting the two guides, viz., by the action of the movable connecting point upon the detent spring, as above set forth.

Third, I claim the employment of a clicking apparatus to indicate the proper time of depressing the keys: the whole being constructed and arranged in the manner and for the purpose, substantially as herein set forth.

To H. L. Sheperd, of Dayton, Ohio, for improved arrangement of Dampers in Cooking Stoves.

I claim the vertical dampers placed below the top of the oven in the division partitions, substantially as hereinbefore described.

To David Stuart, of Philadelphia, Pa., (Assignor to W. P. Cresson,) for improvement in Blowers of Franklin Stoves.

I claim the inner doors or blowers made to slide in grooves within the front plates of the stove, serving, when closed, as a blower, and when not in use, being withdrawn out of the way and out of sight, substantially in the manner and for the purposes as above described.

RE-ISSUE.

To Desire Buck, of Albany, N. Y., (Administrator of Darius Buck, deceased,) for improvement in Cooking Stoves. Patented May 20, 1839.

I claim the heating chamber in front of the oven, in combination with the arrangement of direct and return flues at the bottom and back of the oven, substantially as described, for the purpose of imparting an equal or nearly equal heat to the oven, as described.

And secondly, I claim in combination with the heating chamber in front, and the arrangement of direct and return flues at the bottom and back, substantially as described, the extension of the oven under the open hearth or apron of the stove, substantially as described, whereby the capacity of the oven is increased relatively to the other parts of the stove and and at the same time heated equally or nearly so, as described.

DESIGNS.

To G. W. Ring, of Troy, N. Y., (Assignor to Johnson, Cox & Co.,) for design for a Parlor Stove.

To W. L. Sanderson, of Troy, N. Y., (Assignor to S. Cole & G. C. Mosher, for design for a Stove.

To C. W. Warnick, of Philadelphia, Pa., for design for stoves.

For the Scientific American.

New Roofs.

I think I saw in your valuable paper, under the head of "Patentable Subjects," some reason to doubt the decision of the Patent Office in relation to a subject offered some time ago for patent and refused. I have no desire or need of patent privileges, and made the proposition only to aid an industrious and deserving mechanic. Some of our cities have become so crowded that it is often necessary to use the roofs of houses for various purposes. I had occasion to build several small houses in this city, where there was no room for yards, and covered part of the roof in the following way. The parts to be covered had a very small inclination, and were covered first with sheets of tarred sheathing paper, shingle fashion, so as to make three thicknesses; the tar was about half boiled down, and the paper covering well coated with it, then common flat tiles laid on while the tar was warm, so that it rose between the joints about half an inch, then dry sand was spread over the whole and swept till the joints were filled. These roofs were so made about ten years ago, and remain tight, although often roughly used for chopping wood. They are certainly fire-proof, and how long they will last I know not. Common hard bricks are as good as tiles, but lately, for economy, I have had some bricks of the usual superficial dimensions made, but one inch thick; these may be used for any roofs, instead of Dutch tiles or slates. I may remark that my buildings have been readily insured as the first class. Very little extra strength need be given to the framing of the roofs, and that only on account of their being used as yards.

We claim for a patent vested on the combination of an old practice here, called composition roofing, and the Spanish and Moorish roofs made of tiles laid in cement. The motive for this combination was a fear that our hard frosts might injure the cement. I have used this system for my own purpose, and am satisfied with the result, and I should be well pleased that others should do the same if there be any advantage in it. W. F.

Boston, August, 1850.

[We have seen roofs made of asphalt covered with cloth, the cloth then pitched and covered with gravel. We have also seen pavements laid in asphalt, but have never seen roofs made as described by our correspondent. Roofs of this description *may* have been known to the Patent Office, but we doubt it, and think a patent was unjustly refused.

For the Scientific American.

Formation of Rain.

On the 23d of August, 1850, while making topical ascents with the balloon Hercules, from Lancaster, Pa., it rained during part of the day. The cord used to let the balloon up with was 1,050 long. Three and four ascended at a time. The first ascent was made under a tolerable heavy shower of rain, and I noticed when up the whole length of the rope, that there were two distinct strata of clouds, as the lower stratum was open at places at the time. Where it was open there fell no rain; where the lower stratum became illuminated in parts, by the sun shining on it through the upper, it ceased raining at the illuminated parts. At 12 M., about an hour after the experiments commenced, the lower stratum became almost generally illuminated, and soon it began to break up, while the upper stratum could be distinctly seen from the earth, and through the upper the blue sky could be seen in small spots or places. A common observer will not notice in such cases that there are two distinct layers of clouds when viewing them from the earth, though the upper layer may be 3,000 feet above the lower.

At 3 P. M. I ascended free in the air having in the car with me, my wife, Miss Denton and my son Charles, a lad of fifteen. The atmosphere was calm. In seven minutes we reached the lower stratum of clouds. They were within 2,500 feet of the earth, and were thin and ragged. As we passed through them it was very warm. The sun was shining on and partly through them at the time. When we got above them, my son said it looked like a "white sea." Above us some thousand feet, a broken heavy cloud stratum existed at the time. Some distance above the lower stratum the air was cool. During our flight there fell no rain, and by the time we landed, being 34 minutes from the start, the atmosphere got tolerably clear.

I have noticed this phenomena before, *vide* my work on aeronauts, pages 210 and 211. In thunder storms it rains without the existence of two strata. Then there are up-moving currents. This I have frequently seen when above and below them. In settled rains I never experience up-moving currents, but always two distinct strata of clouds, and the lower stratum corresponding to the uneven surface of the earth. I am satisfied that settled rains are formed differently from thunder storms. I shall pursue these observations closely hereafter, and I hope meteorologists will consider what I have here stated. They may assist me in these observations, and I can assist them in perfecting this important science. JOHN WISE.

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TO CORRESPONDENTS.

"R. E. of Mo."—To determine the specific gravity of solids, fill a phial with water, and mark the weight of the whole accurately, in grains. Weigh 100 grains of the substance to be examined, and drop it gradually into the water, in the phial. The difference in the weight of the bottle with its contents now, and when it was filled only with water, will determine the specific gravity of the substance under examination. For example, if the bottle weighs 40 grains more than when it was filled with water only, it shows that 100 grains of the mineral displace only 60 grains of the water; and consequently that it is of nearly twice the specific gravity of water.

"J. H. of Ala."—We shall suffer as little delay to arise in your business as possible, after the model reaches us.

"H. W. P. of N. Y."—Your subscription is now paid through the next volume, and the account stands balanced. $8 received.

"W. K., of Pa."—We will keep the article on Gravitation for our next volume; it is good at any time.

"L. S., of Fa."—"Turbine" derives its name from *turben*, a top, and means, spirally constructed like a shell.

"W. F. L., of N. Y."—We have seen 20 different kinds of car couplings, none of which have superseded the link and pin. The p—— flour is certainly good and useful—no doubt of that. If your process is new it is patentable.

"J. J. K., of Iowa."—It is very difficult to give you the advice desired. We cannot say say which is *the best* water-wheel for your purpose, the fall is so low. Wheels are made at the Fulton Foundry, Boston, and at Matteawan, Dutchess Co., N. Y. If you write to the latter place, you will get the required information. You should state the quantity of water discharged in a given time.

"A. W., of Indiana."—Your bedstead fastening appears to be a good one, and so far as we can judge, is patentable.

"C. P. S. W., of Me."—We will examine the model of your invention if you wish it. The expenses attending it would be communicated by letter upon its receipt.

"D. & P., of Ill."—We shall write you as soon as possible—in answer to yours of the 18th ult.

"D. L., of Ill."—A perspective view of the beehive could not be taken from the figures shown in the circular. We should require a model for that purpose. The cost would be $8.

"W. K., of Texas."—The model of your saw mill has been received and examined. We regret to state that it does not present any novel feature upon which a claim could be sustained. The manner of hanging the saw is well known in this section of country, and is considerably used. There is no patent on it, and you can apply it without danger. We advise you not to spend any more money upon it. Your paper will hereafter be sent to Jasper.

"E. R. B., of Me."—London is supplied with water for drinking, etc., by 8 different water works. They deliver about 45,000,000 of gallons in 24 hours. The Croton works of this city can discharge 60,000,000 in the same length of time.

"J. F. M., of Pa., & A. C., of Ct."—We have not had time to examine your communications, but will do so during the early part of next volume.

"A. L., of Ct."—Your P. M. has a right to frank letters containing money for subscriptions.

"J. P. M., of Mass."—Messrs. Hoard & Bradford, Watertown, N. Y., manufacture small portable engines and boilers of a very superior character, and at very low prices. By addressing them you can obtain all the information you desire.

"L. B., of Ct."—We cannot at present answer your first question, but we can your second. India rubber shoes can be mended by a varnish of india rubber, which unites the solid parts together. Another plan is to unite the two pieces together by a cement of gutta percha, and pressing the parts together with a hot iron. We have performed the last process.

"J. W. H., of R. I."—We do not know of any patent at present that you could engage in as a manufacturer. If we should hear of any opportunity, it would give us pleasure to advise you of it.

"W. A. C., of Vt."—We are sincerely obliged to you for your kindness, and the list of subscribers which you have sent. We do not believe that a second patent is required—the principle being embraced in the first. The zinc composition is new, but is it not very brittle, and unsuited for friction metal. Give this your attention.

"S. M. A., of Miss."—The reason of the difference in temperature arises from the fact, that when the rays of the sun fall upon a spot directly, they strike with more force, and a greater number of them are included in a small space; when their direction is more oblique, they are more scattered and do not produce the same intensity of heat. The Alps on one side are covered with eternal ice in the Valais, whilst the opposite hills are adorned with rich vineyards, and all the charms of fertility. The reason is, that if a hill having a southerly aspect, prevent a certain inclination, and the sun be at a corresponding altitude, the solar rays will strike the side of the hill perpendicularly, while on the plain below and around, the rays strike the earth obliquely, and with a diminution of force.

Money received on account of Patent Office business, since August 27, 1850:—

"T. H., of N. Y., $10; J. L. P., of Mass., $30; W. A., of Conn., $50; J. E. L., of N. Y., $55; N. J. W., of Mass., $20, and E. M., of Ky., $63.

Now is Your Time.

Those desiring to secure Volume 5 but have delayed subscribing, are advised to remit $2 without delay or they. We have a few incomplete sets of Volume 4, containing each about 40 numbers, which will be forwarded by mail on the receipt of one dollar. Those of our subscribers whose term for which they have pre-paid expires with Volume 5, and who design renewing their subscription to Volume 6, will accommodate the publishers by remitting their money before the new Volume commences.

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PATENT METALIC OIL FOR MACHINERY—Warranted not to gum. Manufactured under Cumberland Brothers patent (April 6th 1849), by C. B. de la Vergne & Co., Elizabethport, N. J. Transparent metalic, adapted to light bearings, spindles, &c., will last a quarter longer than pure sperm. For burning will be found superior. Fluid White Metalic, of the consistance of cream, to be used without wick and tube, adapted to the oiling of engines, shaftings, &c. will last twice as long as pure sperm oil. Hard White Metallic, to be used instead of tallow, will last three times as long; when used in cylinders, the packing must be renewed. Blue Metallic grease, prepared for greasing the inside of boilers when thoroughly cleaned, that the scale which afterwards collects may be removed with one third the usual time and expense. It is also adapted to the greasing of cog wheels; and for the axels of vehicles it has been found to last more than four times as long as any grease ever used for that purpose.
KENNEDY & GELSTON, Sole Agents,
50 3m No. 8 Pine st. New York.

IMPROVED STEAM ENGINE FOR SALE.—The subscriber has four of his improved steam engines of three and six horse power left for sale. They ard made of the best materials—steel piston rods, metalic packing, heavy iron frames, governors and pumps, all complete for $135 for a three, and $235 for a six horse power. Boilers will be furnished for each engine, if required, for $20 each. JAMES WYLIE, Engineer,
51 4* No. 2 Bethune Street, N. Y.

TO IRON FOUNDERS AND MACHINISTS in the Northern and Eastern States.—The Subscriber, sole agent for the sale of rights to make and sell the celebrated Bogardus Horse Power, will contract with any one disposed to manufacture the best horse power in the world, upon reasonable terms. Address GEORGE VAIL, Morristown, N. J.
1am1y*

BURR MILL STONES.—We have made arrangements which will enable us to supply all kinds of French Burr, Holland and Esopus Mill Stones of the best material and manufacture, at the lowest prices. Burr Mill Stones made to order and warranted to be of the best quality; Burr Blocks for sale.—Orders addressed to MUNN & CO., post-paid, at this Office, will meet with prompt attention. 41tf

PATENT SELF-ADJUSTING WRENCH. The Subscriber having obtained Letters Patent on his improved Self-adjusting Wrench desirous to sell rights or arrange with some manufacturer to furnish his Wrench to the trade. Address
ADAM HAY, 14 Allen st.,
50 4* Newark, N. J., post-paid.

Patent Office.

128 FULTON ST.

NOTICE TO INVENTORS.—Inventors and others requiring protection by United States Letters Patent, are informed that all business relating to the procuration of letters patent, or filing caveats, is transacted at the Scientific American Office, with the utmost economy and despatch. Drawings of all kinds executed on the most reasonable terms. Messrs. Munn & Co. can be consulted at all times in regard to Patent business, at their office, and such advice rendered as will enable inventors to adopt the safest means for securing their rights.

Arrangements have been made with Messrs. Barlow and Payne, Patent Attornies, in London, for procuring Letters Patent in Great Britain and France, with great facility and dispatch.
MUNN & CO.,
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AMERICAN AND FOREIGN PATENT AGENCY.

WE WOULD remind our numerous friends throughout the country, that we still continue to conduct the business of procuring Letters Patent for new inventions in this and all foreign countries, where the right is recognized. Since making arrangements with those eminent attorneys, Messrs. Barlow, Payne & Parken, Editors of the London Patent Journal, we have secured and managed through them, several foreign applications, with the utmost economy and facility. Inventors and others, desiring advice upon this subject, can correspond confidentially with the Editors of this paper.

PATENT ROCK DRILLING MACHINE—The celebrated Rock Drilling Machine, invented by Messrs. Foster & Bailey, of this city, and described with an engraving on page 153 of Vol. 3 of the Scientific American; is now offered for sale in rights to suit purchasers. The machine has been thoroughly tested upon all kinds of rock, and its superiority over every other drilling machine that has yet been invented, must be apparent to every one who has had experience in using machines for this purpose. A silver medal was awarded to the inventors by the American Institute, and while it was exhibiting at the Fair for a few days, it attracted crowds to witness its simple but successful operation. A model of the machine, with the "Silver Medal," may be seen at the Scientific American Office, and any letters of enquiry concerning the purchase of rights may be addressed, (post-paid) to MUNN & CO.

P. S.—A valid patent is secured on the above, and the public are cautioned not to infringe the claims.

Patent Rights for sale for any State, county, or section, and working drawings furnished to the purchaser. 47tf

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Inches.	In Stock.		Afloat.
1 1-4	1221	7-0	—
1 1-2	105	10-6	120
1 3-4	—	10-6	290
2	226	10-0	—
2	1166	12-0	—
2	941	14-0	—
2	1203	15-0	700
2	55	4-9	—
2	77	4-10	—
2 1-4	546	15-0	252
2 1-2	460	15-0	210
2 3-4	349	15-0	180
3	78	15-0	200
4	18	15-0	—
5	1	15-0	—
6	14	15-0	—

THOS. PROSSER & SON, Patentees,
September 3, 1850. 28 Platt st., New York.

BRUSH'S IMPROVED DOUBLE-ACTING LIFT AND FORCE PUMP.—From the increased facilities of the subscriber, he is now prepared to furnish, at a reduced price, the most effectual, powerful, durable and yet simple Lift and Force Pump in use. For a house pump, factories, breweries, railroad stations, or any other purpose where a constant stream of water is required, they cannot be surpassed. The public are cautioned against an article purporting to be Brush's Pump, but are invited to call at or address 83 Pike Slip, and get the original. J. A. BRUSH, Inventor. 49 3m*

CLOCKS FOR CHURCHES, PUBLIC Buildings, Railroad Stations, &c.—The subscriber having made important improvements in the construction of Clocks, especially in the apparatus for counteracting the influence of the changes of temperature upon the pendulum, and in the retaining power, (which keeps the clock going while being wound up,) together with a most precise method of adjusting the pendulum to correct time, are prepared to furnish time-keepers of a very superior quality, both for accuracy of time-keeping and durability. They speak with confidence, from having tested their performance for several years. The terms of payment will be so arranged as to afford purchasers ample opportunity to test their qualities. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, Long Island.
40 3meow*

TO IRON FOUNDERS, &c.—Fine ground and bolted Sea Coal, to mix with moulding sand, an approved article ground from selected lump; Charcoal Foundry Blacking; Bolted Lehigh, Soapstone, Black Lead Foundry Facing; also Fire Clay, and Iron and Brass Founder's superior Moulding Sand, in barrels, for sale by G. O. ROBERTSON, New York. City Office 4 Liberty Place, Maiden Lane, near the Post Office. 47 4eow

JUST ISSUED—A new edition of Minifie's Mechanical Drawing Book, substantially bound in paper, which can be forwarded through the mail.—Price $3. For sale by MUNN & CO., Agents, New York. 42tf.

WILLIAM HOVEY'S PATENT SPIRAL Cylinder Straw Cutters are now manufactured by the Patentee, at Worcester, Mass., and not by C. Hovey & Co., their license to build and sell these celebrated machines having expired. No persons in Worcester have any right to make or sell these machines, except the patentee. All offered to the public as Hovey's Cylinder Straw Cutters may be considered spurious, unless the knives are attached to wings, cast on the cylinder, by nuts and screws, with set screws to adjust them on the cylinder. These machines are for sale in this city by John Mayher & Co., 197 Water st. WM. HOVEY, Patentee.
New York, Aug. 16, 1850. 49 3*

12 POWER PLANING MACHINES.—SCRANTON & PARSHLEY, New Haven, Conn., have now finishing off 12 power Planers that will plane 8 feet long, 27 inches wide and 24 inches high; these planers are of the first quality, are self-feeding every way; the table is worked by a rack and pinion; the bed is 12 feet long. With each planer there is a spining head and counter shaft, pullies and hangers. They weigh about 4000 lbs.; the price, boxed and ready to ship, is $625. Also 12 hand lathes, with back gear on iron shears, and legs 7 feet long, swing 20 inches, about 700 lbs. weight—$75. These lathes are of the first quality. 45tf

ALCOTT'S CONCENTRIC LATHES.—We have on hand a few of these celebrated Lathes, which the inventor informs us will execute superior work at the following rates:—

Windsor Chair Legs and Pillars, 1000 per 11 hours. Rods and Rounds, 2000; Hoe Handles, 800; Fork Handles, 500; Broom Handles, 150, per 11 hours.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch, and work as smoothly as on a straight line, and does excellent work. Sold without frames for the low price of $25—boxed and shipped, with directions for setting up. Address, (post paid). MUNN & CO.,
14tf At this Office

TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N. Y., by
QUARTERMAN & SON,
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COTTON, WOOLEN AND SILK MANUFACTURERS' DEPOT.—ANDREWS & JESUP, No. 70 Pine st., N. Y., dealers in articles for the use of Cotton, Woolen and silk manufacturers, and agents for the sale of shearing, carding, burring, napping, wool-picking, flock-cutting and waste machines, regulators, satinet and jean warps, &c. Weavers' reeds and heddles, bobbins and spools, of every description, made to order. Sperm, lard and olive oils and oil soap. 40tf

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The above machine can be seen in successful operation at P. R. Roach's mills, No. 138 Bank st., this city. 51t

MACHINERY.—S. C. HILLS, No. 12 Platt Street, N. Y., dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills Kase's, Von Schmidt's, and other Pumps, Johnson's Shingle machines, Woodworth's, Daniel's and Law's Planing machines, Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines, Belting, machinery oil; Beal's patent Cob and Corn Mills; Burr Mill, and Grindstones, Lead and Iron Pipe, &c. Letters to be noticed must be post paid. 46tf

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JOSEPH P. PIRSSON, Civil Engineer,
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Scientific Museum.

For the Scientific American.

Experiments with Metals.

[Concluded from page 392.]

TIN.—1. Pour upon tin, in fragments, dilute aqua fortis, and it will become a white powder. 2. Dissolve tin in muriatic acid, with a little aqua fortis, and tin mordant is produced.

BISMUTH.—1. Perforate the crust of a mass which is just cooling from a state of fusion in a crucible, and pour out the still fluid interior. The vessel will be lined with a multitude of brilliant crystals. 2. Melt 800 grains of bismuth with 400 of tin and 400 of lead. The alloy is fusible in boiling water. Many toys are made of this composition.

ANTIMONY.—Mix 600 grains of nitre, 200 of sulphur, and 100 of sulphuret of antimony, and apply a lighted match. A brilliant deflagration takes place, called the blue signal light, and can be seen fifty miles.

CHROME.—Wash a sheet of letter paper with a solution of bi-chromate of potash, and dry in the dark. Lay upon it a leaf or an engraving, and place a pane of glass over the whole. Expose it thus to the sun for 10 minutes, then wash the paper in clear water. Daguerreotypes will be formed.

MANGANESE.—Dissolve black oxyde of manganese in oil of vitriol, and evaporate: a beautiful rose-colored salt is formed, which is used to give a fine brown dye to cloth.

ARSENIC.—Mix a little with a drop of a solution of nitrate of copper, and add a minute quantity of potash: yellow colored arsenite of copper is seen. 2. Treat another portion in the same way with blue vitriol, and grass-green arsenite of copper appears.

COBALT.—Write or trace a picture, on paper, with a dilute solution of muriate of copper; nothing is observed when it is dry; heat it, and the characters appear of a fine blue color. If the solution be mixed previously with salt, a green tint is formed. The color fades again on cooling. 2. The oxyde of cobalt imparts a splendid blue to glass.

MERCURY.—1. Heat in a glass tube over a spirit lamp, 20 grains of quicksilver and 3½ of sulphur. Vermillion is produced. 2. Heat 20 grains of quicksilver and 25 of iodine in the same manner: a brilliant yellow oxyde is formed, which soon becomes scarlet.

SILVER.—1. Dissolve silver in fragments in dilute aqua fortis; lunar caustic is formed. 2. Add common salt to a solution of the latter, and chloride of silver is precipitated, which becomes black by exposure to the light.

GOLD.—1. Dissolve gold leaf in aqua regia, dilute, add tin mordant, and the purple precipitate of Cassius is formed. 2. Before adding the mordant above, dip a slip of glass in the solution, over a lamp, and chlorine is expelled and metallic gold remains. On looking through the glass, a purple tint is often seen. 3. Gold wash is applied by a mixture of soda with oxyde of gold, in which articles cleansed in aqua fortis are boiled, and thus become gilded.

PLATINUM.—1. Dissolve the crude metal in aqua regia, and add to the deep brown liquid chloride of ammonium; an orange colored precipitate is thrown down, which, being reduced by heat, becomes platinum sponge. This substance is heated to redness by letting on to it a stream of hydrogen gas. The common instrument employed for lighting tapers is made by taking advantage of this principle.

J. O.

A Balloon Railway

Major Browne, of Great Portland street, London, has addressed a letter to the merchants and bankers of London, proposing the establishment of a balloon railway across the great desert of Africa. He suggests the establishment of a terminus near Morocco, whence he would lay 1000 or 1500 miles of single rails into the desert. These rails are for the guidance of balloons, which are to carry 15 persons each. An immense and lucrative trade with the interior, the Major conceives, could be carried on by this means. He offers to exhibit his models free of expense.

History of Propellers and Steam Navigation.

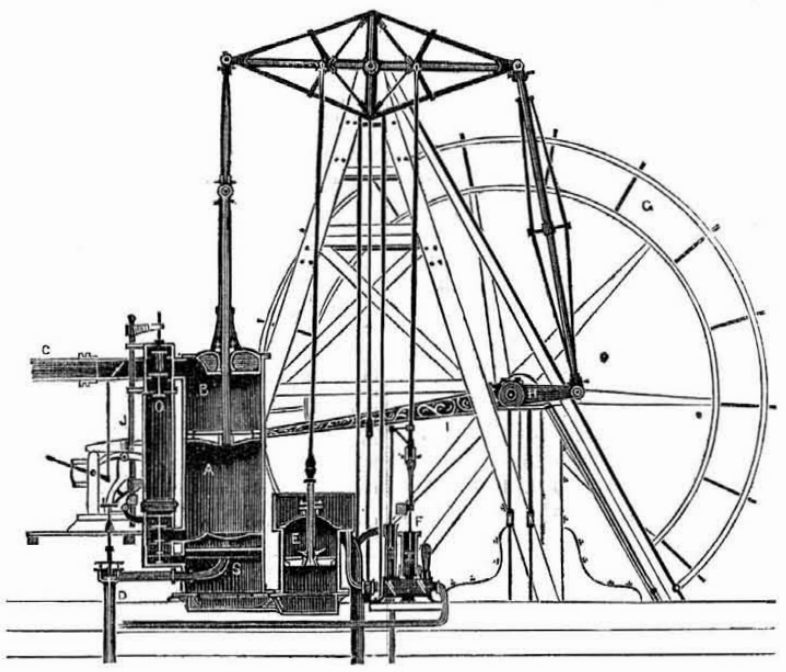
[Continued from page 400.]

RIVER STEAMBOATS.

In America the river steamboat differs materially from the marine steamship. This difference is unknown in Britain, because the rivers are so near the sea, that all the steamboats have been and must be built to withstand the buffettings of the ocean.

The accompanying engraving is a vertical section of the American Condensing Engine, for river boats. A minute description of all the parts is not required, as our object is mainly to show its application to propulsion; nevertheless, this view of the engine will serve to convey a very correct idea of its relative parts. A is the steam cylinder; B is the piston rod passing up through a stuffing box and connected with the beam; C is the steam pipe coming from the boiler; O is the steam chest, and J is one of the rods to operate the valves; D is the injection pipe, which communicates with the water through the bottom of the boat, and it enters into the condenser, S, below the cylinder; E is the air pump which

FIG. 82.



draws off the water and air in the condenser into a reservoir, whence it passes down a pipe through the bottom of the boat. A continual stream of water rushes up the pipe, D, into the condenser, to condense the steam *suddenly*, to form a vacuum; F is a force pump, to supply the boiler with water; H is a crank secured on the main or wheel shaft, and attached by a pin to the connecting rod of the beam. On the main shaft is a rocking rod, I, which runs forward and hooks over a cross shaft in front of the steam chamber. This shaft is rocked by the rod I, which is worked by an eccentric to rock large curved prongs or toes in front, which act upon other prongs on the rods, J, and thus lift the valves, and allow them to close. G is the paddle wheel. When the steam is rushing in at one end of the cylinder, it is rushing out at the exhaust into the condenser, at the other. There are four valve rods on one engine, two on one side works the exhaustvalves, and two on the other side work the steam valves. These open and close alternately, giving motion to the beam, which, by the crank H, changes the reciprocating motion of the piston rod into rotary motion on the main shaft, thus propelling the paddle wheels.

When steamboats were first built, it was supposed that they were fit only for river navigation,—this was Fulton's opinion. The great inland navigation of the United States has been the means of producing a class of steamboats which are perfectly national, and which have no rivals for speed and splendor. It is generally conceded that we are more indebted to R. L. Stevens, of New York, for improvements in our river boats than any other person. It is indeed true that we see in the above condensing engine nothing more than the principles embraced in that of Watt—excepting the manner of working the valves by "Steven's Cut Off," which is very superior to the old tappet arrangement of Watt's engine, as is also the upright guides for the piston rod, which is superior to the parallel motion, and this also was introduced by Stevens.

The form of the American steamboat is beautiful and clean for speed: they have fine clean runs and bows like razors. They divide the water instead of pushing it up before them, and they are so long, that the divided element gradually unites towards the stern, and pushes forward the vessel, instead of forming a partial vacuum behind, as in the old-fashioned short blunt boats.

The engines of the American river boats are worked on the principle of the Cornwall Engines—the stroke of the piston being long, and the steam used expansively. This is an economical practical advantage. Mr. Adam, of West Point Foundry, was the gentleman, as stated by Prof. Renwick, who introduced this system.

There is one peculiarity about the American river steamboats, viz., their huge wheel-houses. The paddle wheels of the New World, which runs in the North River are 46 feet in diameter. The Alida is another fast boat has wheels 31½ feet diameter, and the Thomas Powell, a smaller boat by a great deal than either of the other two, has 40 feet wheels. There does not appear to be any adopted rule for the size of the wheels according to the size of the vessel. Large wheels allow the paddles to enter the water nearer to a vertical position and to rise in the same manner, than small wheels, hence there is less concussion when they enter the water, and less lift of water on the blade when rising, and these are important advantages in propelling. Aside from all theorizing, practice has proven the truthfulness of this conclusion.

Mill Driven by Artesian Wells.

The following account of a mill driven by water from artesian wells, is taken from our worthy exchange "The Beacon," of Greensboro', Ala.—it will surprise not a few of our readers. "At Millwood, Dr. Withers has a mill which is supplied with water from six Artesian Wells, situated in the premises, at distances from the Mill varying from some 50 to 200 yards, ranging in depth from 300 to nearly 600 feet, and affording nearly 1000 gallons of water per minute. The water flows from all the wells to a common reservoir and is conveyed thence to the Mill by an aqueduct under ground, and is received into a box or reservoir, whence it falls on a reaction wheel 40 feet below, and thus puts the Mill in motion. After acting on this wheel, the water is conveyed to the river by means of a Tunnel, dug through the limestone rock, 240 feet in length, and, at the highest point, upwards of 50 feet in depth. The Tunnel is 5 feet 8 inches deep, by 4 wide.

As the water is no where visible under the Mill, and empties into the river at a point not seen from the Mill, some 50 odd feet below the top of the bluff, the Mill when in motion presents to the superficial observer the appearance of a self-acting piece of machinery.

The reaction wheel is one of Whitelaw & Stirrat's, and was manufactured at the West Point Foundry. It is only 30 inches in diameter, with two apertures for the escape of the water, 1 by 4 inches. It makes 450 revolutions per minute, and the saw 150 strokes, cutting about 2000 feet of lumber per day. The wheel is calculated for running two saws, though only one has been yet attached. The entire machinery works finely, and appears to be constructed on the most approved principles."

The British papers are pressing for a higher duty on American flour to make amends for our tarriff on their pig iron.

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Any person sending us three subscribers will be entitled to a copy of the "History of Propellers and Steam Navigation," re-published in book form—now in press, to be ready about the 1st of October. It will be one of the most complete works upon the subject ever issued, and will contain about ninety engravings.

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